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(54) DOUBLE WALL CUP

(57) **Abstract:**

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The present invention relates to a novel cup structure, and more specifically to a novel double wall cup.

It has heretofore been suggested to form drinking cups suitable for both hot and cold beverages with inner and outer spaced apart walls so that the outer surfaces are insulated from the contents sufficiently to enable the cup to be comfortably held in the hand. In order to enable such cups to be produced sufficiently economically to enable their use in dispensing machines and as throw-away items, it is desired to minimize material costs by making the walls substantially as thin as practical. This, however, creates problems in heat transfer and in structural integrity. While proposals have been made for solving these problems and certain of these have met with substantial success, the present invention contemplates further improvements.



1 It is an important object of the present invention to provide a novel cup having inner and outer walls formed from thin material and each formed for increasing the strength and rigidity thereof and for engaging the other in mutually supporting relationship and in a manner for minimizing heat transfer between the inside of the cup and outer surface portions thereof which are to be touched by the hand of a person holding the cup.

10 A more specific object of the present invention is to provide a novel cup of the above described type which is constructed so that the inner and outer walls may be quickly and economically assembled with each other without necessitating any predetermined circumferential alignment.

20 A still further specific object of the present invention is to provide a novel cup structure of the above described type wherein the inner and outer walls are respectively formed with narrow ribs projecting for engagement with each other for maintaining the remaining portions of the walls in spaced relationship with the ribs on the inner wall extending at angles with respect to the ribs on the outer wall so that the inner and outer ribs contact each other at spaced small points or areas for minimizing the heat transfer between the inner and outer walls.

Other objects and advantages of the present invention will become apparent from the following description and the accompanying drawing wherein:

Fig. 1 is a side elevational view of a cup structure incorporating features of the present invention:

1 Fig. 2 is a side elevational view of an inner wall member  
prior to assembly within a cup structure of the type shown in Fig. 1;

Fig. 3 is an enlarged fragmentary sectional view taken along  
line 3-3 in Fig. 1; and

Fig. 4 is an enlarged fragmentary sectional view taken along  
line 4-4 in Fig. 1;

10 Referring now more specifically to the drawings wherein like  
parts are designated by the same numerals throughout the various  
figures, a cup 10 incorporating features of the present invention comprises  
an inner member 12 and an outer member 14. These members are  
formed from a thin plastic material such, for example, as high impact  
polystyrene.

20 The cup 10 has a side wall structure preferably with an  
inverted substantially frusto-conical configuration. This side wall  
structure has an intermediate gripping and insulating portion 16  
described more in detail below. As shown best in Fig. 3, upper margins  
18 and 20 of the inner and outer cup members are rolled together to  
provide the cup with a rim 22. The rolled and interlocking margins  
further serve to secure the inner and outer cup members with respect  
to each other.

The inner and outer members 12 and 14 respectively have  
integral bottom sections 24 and 26. These sections are axially separated  
from each other as shown in Fig. 3 so as to define an air space 28  
therebetween. The outer bottom section 26 is thus insulated from the  
contents of the cup so as to protect the hand of a person holding the cup  
or a table surface on which it may be placed.

1 As will be understood, it is frequently desirable to stack a plurality of the cups 10 in nesting relationship for storage and dispensing purposes. Thus the inner and outer cup members are provided with surfaces or shoulders which are substantially axially engageable with an adjacent cup in a stack for preventing the tapering side surfaces from wedging together and binding. Such binding makes dispensing difficult and also unreliable. In the embodiment shown, the aforementioned surfaces or shoulders comprise a downwardly facing corner portion 30 of the outer bottom section 26 and a substantially 10 radially extending annular shoulder 32 formed in a lower end portion of the inner cup member as shown in Fig. 3.

In accordance with an important feature of the present invention, the insulated grip portion 16 of the cup is constructed so that the outer side wall of the cup is spaced from the inner side wall and insulated therefrom by air pockets while at the same time the inner and outer walls are mutually self-supporting at spaced points or limited areas. More specifically, the inner cup member has a side wall 34 formed with a plurality of spaced apart axially and circumferentially extending narrow ribs 36 which traverse the grip portion 16 of the cup. 20 In the embodiment shown, these ribs extend generally helically around the side wall of the cup. Preferably the helical pitch of the ribs is quite long so that each rib extends around only a minor portion of the cup circumference.

As previously indicated, the ribs 36 are narrow and are spaced substantially from each other. As shown in the drawings, the ribs are spaced apart by wall sections 38 having transverse dimensions substantially greater than the transverse dimensions of the ribs.

1 The outer cup member 14 has a side wall 40 corresponding to the side wall 34 of the inner cup member. The outer side wall 40 is also formed with a plurality of spaced apart narrow ribs 42 separated by relatively wide wall sections 44. In the embodiment shown, the ribs 42 also extend with a long helical pitch axially and circumferentially of the cup. However, the ribs 42 are formed with a helix of one hand while the ribs 36 are formed with a helix of the opposite hand. As the result, the ribs 36 which project outwardly from the wall sections 38 and the ribs 42 which project inwardly from the wall sections 44 10 abut each other with substantially point contact at limited and spaced apart areas 46. Thus the outer surfaces of the wall sections 44 which form the gripping surfaces of the cup are effectively insulated by air pockets 48 between the inner and outer walls. The points or spaced apart limited areas 46 of contact between the ribs enable the inner and outer walls to support or reinforce each other while at the same time minimizing the conduction of heat directly between the inner and outer walls. Contact at the areas 46 is limited by forming the ribs so as to present narrow edges for crests for engagement with each other and this may be accomplished by providing each rib with a generally V-shaped cross-sectional configuration. The ribs formed in this manner not only minimize the transfer of heat mentioned, but also aid in strengthening and 20 rigidifying their respective side walls 34 and 40.

While a preferred embodiment of the present invention has been shown and described herein, it is understood that many structural details may be changed without departing from the spirit and scope of the appended claims. For example, while ribs of the opposite hand have been disclosed on the inner and outer cup members, it is contemplated

1 that the configuration of either one or both of the inner and outer ribs may be modified into a variety of shapes as long as the inner ribs cross the outer ribs at angles so that discrete areas or points of interengagement are obtained and are spaced both axially and circumferentially of the cup and the cup is formed with insulated air pockets between the inner and outer walls and separating the points of engagement.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A double wall container comprising an inner member and an outer member, said members respectively including inner side and bottom walls and outer side and bottom walls, said inner and outer side walls respectively including groups of outwardly and inwardly projecting elongated ribs separated by wall sections, said outwardly and inwardly projecting ribs abutting each other at a plurality of separate discrete areas spaced axially and circumferentially of said container, and said wall sections being spaced from each other and defining insulating air spaces between said discrete areas, areas of said outwardly and inwardly projecting ribs between said separate discrete areas also being spaced from each other and from opposing wall sections.

2. A container, as defined in Claim 1, wherein the ribs of one of said groups of ribs extend both axially and circumferentially of said container.

3. A container, as defined in Claim 1, wherein the ribs of both of said groups of ribs extend partially axially of said container and also partially and oppositely circumferentially of said container.

4. A container, as defined in Claim 3, wherein said ribs extend generally helically.

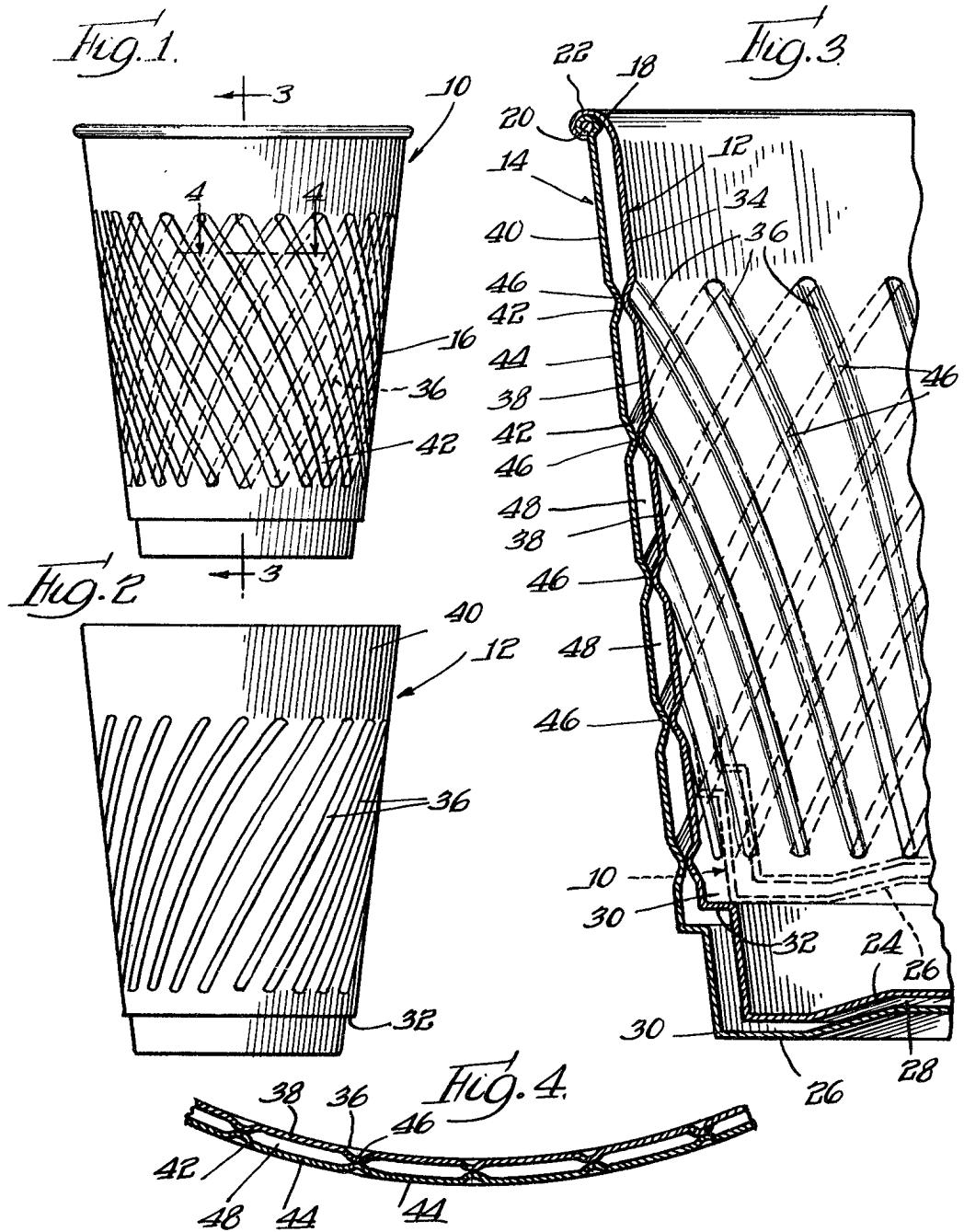
5. A container, as defined in Claim 3, wherein said ribs have a predetermined transverse cross-sectional dimension, and said wall sections have a corresponding transverse cross-sectional di-

mension substantially greater than said predetermined dimension.

6. A container, as defined in Claim 5, wherein said ribs have a substantially V-shaped transverse cross-sectional configuration.

7. A drinking cup, as defined in Claim 3, adapted to be nested in a stack of similar drinking cups and comprising axially facing surface means on one of said members engageable with a complementary axially facing surface means on the other of said members in an adjacent cup in the stack for preventing binding of the cup members in the stack.

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